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ABSTRACT

This paper identifies and compares the level of career maturity as measured by the Career Maturity Inventory (CMI) for students (N=221) in grades 9 and 12 in 1 suburban district in Nebraska. The participating school district was preparing for the implementation of a developmental, comprehensive, and competency-based guidance program. Specific baseline data related to several aspects of student career development was provided prior to implementation of the program. The CMI assessed career maturity values corresponding to a Competence Test, Attitude Scale, and Total Score. Analysis of data showed that students in grade 12 scored significantly higher than the students in grade 9 on the Total Score and Competence Test. No significant differences were found between grades for the Attitude Scale of the CMI. This finding was unanticipated, as career maturity is a developmental construct that is typically expected to increase with the age or grade level of students. Gender did not account for a significant amount of the variability in Total Score of the CMI. Results of an item analysis of the CMI are shared and discussed. (Contains 5 tables and 28 references.) (JDM)

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Student Career Development in Grade 9 and Grade 12:

Can Growth Be Assumed?

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Abstract

The purpose of the study was to identify and compare the level of career maturity as measured by the Career Maturity Inventory (CMI) for students in grades 9 and 12 in one suburban school district in Nebraska. The participating school district was preparing for the implementation of a developmental, comprehensive, and competency-based guidance program. This study provides specific baseline data related to specific aspects of student career development prior to such implementation.

The study population (N=221) completed the CMI (1995) which provided career maturity values corresponding to a Competence Test, Attitude Scale, and Total Score. Analysis of the data showed that students in grade 12 scored significantly higher than students in grade 9 on the Total Score and Competence Test of the CMI. No significant difference between students in grades 9 and 12 were found for the Attitude Scale of the CMI. This finding was unanticipated, as career maturity is a developmental construct that is typically expected to increase with the age or grade level of students. Gender did not account for a significant amount of the variability in Total Score of the CMI. Results of an item analysis of the 50-item CMI (revised 1995) are shared and discussed. Recommendations for further research are presented.

Student Career Development in Grade 9 and Grade 12: Can Growth Be Assumed?

Among the most fundamental challenges faced by our nation's schools is to prepare our youth for success beyond their secondary school experience. This task is made exponentially more difficult when considering the diverse nature of students within a given school population. A measure of success often used to evaluate educational programs is the preparedness or the performance of graduates in the world of work. Educators attempt to assist all students in this endeavor by offering numerous career-focused activities. Career counselors in the schools may assess and teach aspects of career interests, aptitudes, personality, knowledge of occupations, and other potentially relevant attributes (Hood & Johnson, 1991). Although career preparation is truly the charge of an entire educational program, the guidance and counseling staff are often perceived to have the paramount responsibility for facilitating student career development. In fact, counselors are called to foster growth in the area of career development as reflected by the national standards offered by the American School Counseling Association (ASCA). The ASCA standards identify three areas of focus or domains for school counseling programs: academic, personal and social, and career development (Campbell & Dahir, 1997). Not only is career counseling among the identified areas of focus, but the origin of the profession of school counseling is closely tied to the vocational guidance movement (Gysbers & Henderson, 2000).

The focus of this study was to assess student career development and to identify differences between students in grade 9 and grade 12. The study helped to establish baseline data pertaining to career development for students representing a single school

district. Baseline data revealing levels of student career maturity was needed for future evaluation as the schools involved in this study were preparing to implement a new comprehensive guidance program. Comprehensive and competency-based guidance programs provide an articulated model with specific guidance activities and student competencies.

Among the questions being asked of educators is "How are students different as a result of a particular educational program or curriculum?" This question challenges educators across curricular areas to assess student development in light of the targeted competencies associated with their curriculum. As critical examinations of entire educational programs take place, continued emphasis is placed on the need for effective school-based career development programs. Increasingly across the United States, schools are implementing comprehensive and developmental guidance curriculums to direct the activity of their school counseling programs (Gysbers & Henderson, 1997; Sink & MacDonald, 1998). The recent proliferation of this approach not only provides consistent and proactive experiences for students, but it also offers counselors a means of demonstrating their importance within an overall education program.

The implementation of a comprehensive competency-based guidance program typically reflects experiences and competencies centered on the domains suggested in the ASCA standards: academic, career, and personal/social. For reasons of efficiency and access, this study was centered on establishing the levels of student career development and did not attempt to measure or assess student performance in the academic or personal/social domain.

Career Maturity

The construct of career maturity can be defined a number of ways (Westbrook, 1983). Donald Super (1955) used the term *vocational maturity* to denote "the degree of development or the place reached on the continuum of vocational development from exploration to decline" (p. 153). With consideration of Super's (1957) work, Herring, (1998, p.21) suggests that career maturity is "the repertoire of behaviors necessary to identifying, choosing, planning, and executing career goals available to a specific individual as compared with those possessed by an appropriate peer group; being at an average level in career development for one's age." Operationally, career maturity was defined as the score on the Career Maturity Inventory (Crites & Savickas, 1995). The CMI was the primary assessment instrument used in this research.

Arguably, the best construct for measuring how students respond to career counseling activities is *career maturity*. Popularized by Donald Super (1953), this single, yet complex variable, is frequently used to identify how individuals are developmentally different when considering diverse characteristics or educational programs in which participants were involved (e.g., Amatea, Clark & Cross, 1984; Kelly, 1992; Lawrence & Brown, 1976; McNair & Brown, 1983; Wilson, 1987). The decision to use *career maturity* as the construct to compare levels of student career development for this study was based on several considerations. First, *career maturity* is comprised of many critical aspects of student development. For example, *career maturity* as identified by Crites and Savickas (1995) represents student performance related to career decision-making processes, self-image, goal selection, knowledge of occupations, and planning and problem solving skills. Secondly, an understanding of student scores for this construct

has implications for counselors and students as they consider curricula selection, post-secondary planning, and the timeliness of various career-related activities (Super & Overstreet, 1960). In practical terms, the examination of student levels of career maturity in grades 9 and 12 was important to allow for later research opportunities to compare student performance between the newly implemented counseling program with the outgoing approach. This research was, therefore designed to assess current levels of student career development in the participating district.

According to Hood and Johnson (1991), the Career Development Inventory (CDI) and the Career Maturity Inventory (CMI) are two of the most thoroughly developed measures of career maturity. When measured by standardized assessments such as the CDI or the CMI, it is expected that older students will demonstrate higher levels of career maturity than younger students (Crites, 1995; Thompson, Lindeman, Super, Jordaan, & Myers, 1981; Super, 1955). The assumption that students possess increased levels of career maturity as they age further demonstrates the notion that the construct is developmental. For example, this study examined levels of student career maturity in grades 9 and 12. Given the assumption associated with this construct, one might expect that students in grade 12 would demonstrate statistically higher levels of career attitude and competence as measured by the CMI than students in grade 9.

As one might also expect, the CMI's popularity and extensive use has elicited critical examinations of the instrument. Westbrook and others have carried out a program of research aimed at developing and validating various measures of career maturity which have included the CMI (Westbrook & Sanford, 1993). For example, Westbrook has written extensively on the appropriateness or usefulness of career maturity measures to

assess or predict aspects of specific populations (e.g., Westbrook & Sanford, 1991, 1992, 1993; Westbrook & Wynne, 1994). In light of this earlier research, it seems that the results of this study, which used the 1995 version of the CMI, should be carefully considered to determine the meaningfulness of the data.

Research Hypotheses (Null)

1. There is no significant difference in the level of career maturity as measured by the Career Maturity Inventory between students in grades 9 and 12.

2. There is no significant difference in the level of career maturity as measured by the Career Maturity Inventory between male and female students.

Method

Participants

The subjects for the study were 110 ninth grade students and 111 twelfth grade students enrolled at two schools in Eastern Nebraska. Of the participants (N=221) 104 were male, 115 female, and 2 did not identify gender.

Measures

The study used the Career Maturity Inventory (CMI) offered by Crites and Savickas (1995) to measure career attitudes and competence. The 1995 version of the CMI is comprised of two sections: the Attitudes Scale and the Competence Test. The combination of these two scales is identified as the CMI's Total Score. Authors of the CMI indicate that the instrument can be appropriately used for studying career development, screening for career immaturity, evaluating career education, assessing guidance needs, and testing in career counseling (Healey, 1994; as cited in Crites, 1995). The Attitude Scale and the Competence Test each consists of 25 items. To develop the

CMI (1995), five highly reliable items were selected from each of the ten CMI (1978) sub-scales. The process of item selection for the 1995 version of the CMI involved identifying items that ideally generated 50/50 splits between the answers of "agree" or "disagree." Authors of the CMI (1995) indicate that care was taken to select items that were balanced for gender and for majority and minority group membership. At the time of this research, assumptions regarding reliability and validity of the 1995 version of the CMI were largely based on the notion that the new instrument was comprised of items from the well established CMI published in 1978 (Crites, 1995). In other words, the reliability and validity values for the CMI 1995 are assumed to be equal to that of the 1978 version until large enough samples might allow for more specific analyses of the revision.

Design

CMI scores for students in grade 9 provide baseline data for students entering high school while students in grade 12 provided data representative of students who have experienced the majority of the career education program provided within the schools.

Table 1 contains a representation of subjects from the two participating schools within the same suburban school district. For statistical analysis it was determined that a minimum of 45 participants should be involved in each of the four groups. Subjects for the study were part of intact classroom groups since random sampling procedures would have been disruptive to the typical school day and was not feasibly applied to the available population. The two schools involved have similar demographic characteristics including ethnicity, size, and socioeconomic factors.

Procedure

Administration of the assessment and the gathering of student data took place at two high schools within the same suburban school district. Student participants were drawn from social studies courses required for all students in grade 9 and grade 12. Three classes of students in grade 9 and three of grade 12 were selected at each site. The researcher concedes that the use of existing student groups contributes to the study being quasi-experimental. A total of 315 students were invited to participate in the study. Of this group, 221 returned the appropriate permission forms and completed the instrument and student questionnaire. The total rate of participation was 70.2%.

All participants were required to provide a consent form signed by a parent or guardian and an assent form. On a visit following the collection of the appropriate permission forms, the researcher administered the CMI. Each group completed the 50-item instrument, which has no time limit, in approximately 40 minutes.

Data Analysis

Data was analyzed by examining the differences in means between the students by grade level and gender. A statistical analysis of variance (ANOVA) was conducted to determine if significant differences were present when comparing the scores of each group within the design.

The analysis procedure used was a two-factor ANOVA. The intent of this procedure was to allow the researcher to test the differences between all groups and to make accurate probability statements. The statistical package used in this analysis was SPSS version 8.0 (SPSS, 1998).

Results

Table 2 shows that students in grade 12 had numerically higher mean scores than students in grade 9 on each scale of the CMI. This result supports the theoretical expectation that students in grade 12 would have higher scores than students in grade 9 on each aspect of the career maturity measure. Despite this initial observation a statistical analysis of these means reveals some unexpected results.

Table 3 illustrates that the interaction effect between gender and grade level was not found to be statistically significant. The interaction values associated with these two independent variables and Total Score of the CMI were $F(1, 215) = .491$, $p = .484$. Because no significant interaction effect is present, examination of individual main effects is justified. Examination of the main effects pertains directly to the research null hypotheses.

1. There is no significant difference in the level of career maturity as measured by the Career Maturity Inventory between students in ninth and twelfth grade.

The results of the ANOVA show a statistically significant difference between students in the ninth and twelfth grade on both the Total Score and Competence Test of the CMI. Using the alpha level of .05, the main effect for grade level on the three scales was as follows: Total Score $F(1, 215) = 13.18$, $p < .001$; Attitude Scale $F(1, 215) = 2.52$, $p = .114$; and Competence Test $F(1, 215) = 15.84$, $p < .001$. Although a significant main effect was not found when considering grade level effect on the Attitude Scale, a significant relationship was identified between grade level on both the Competence Test and Total Score. Specifically, students in grade 12 scored significantly higher than students in grade 9 on the Competence Test and the Total Score

on the CMI. Hypothesis one was therefore rejected. Of particular interest, however, were the results related to the Attitude Scale of the CMI that did not appear to differentiate between grade levels.

In addition to grade level, gender functioned as the second independent variable. Gender analyses related directly to the second null research hypotheses.

2. There is no significant difference in the level of career maturity between male and female students as measured by the Career Maturity Inventory.

Although females scored numerically higher than males for each scale (Table 4), the difference in mean scores was tested for significance using a 2 x 2 between subjects ANOVA for statistical comparison. As shown in Table 3, there is no statistically significant difference between mean scores for male and female students on the Total Score, Attitude Scale, and Competence Test of the CMI. The results of the ANOVA were as follows: Attitude Scale F (1, 215) = .60, p = .441; Competence Test F(1, 215) = 1.93, p = .167; and Total Score F(1,215) = 1.97, p = .162 (Table 3).

Summary of the findings

1. Twelfth grade students scored significantly higher than ninth grade students on the Total Score and Competence Test of the Career Maturity Inventory ($p < .001$).

2. No significant difference was found between twelfth and ninth grade students on the Attitude Scale of the Career Maturity Inventory (p = .114).

3. Gender did not interact with grade level to explain a significant amount of the variability of Total Scores for the Career Maturity Inventory (p = .484).

4. Gender did not account for a significant amount of the variability in Total Score for the Career Maturity Inventory (p = .162).

Discussion

This study of student career maturity led to several important findings. In addition to providing data related to levels of career maturity, it offers an opportunity to consider assumptions related to the development of student career maturity. The findings also justify further discussion regarding specific aspects of the 1995 version of the CMI's Attitude Scale.

Of particular interest were the results of statistical analysis which compared grade level to measures of career maturity. It was expected that this study would further promote the notion that older students would score higher on career maturity measures than their younger counterparts. Thompson, et al (1981) write that career maturity should increase as students progress from grade 9 to 12. This is expected because career maturity is described as a developmental characteristic. In general, this study confirmed this assumption with one exception. The mean Total Score for the CMI was significantly higher for students in grade 12 than for students in grade 9. As made evident by Table 3, however, this statistical significance was largely derived from the notable weight of the Competence Test score of students in grade 12. The difference in career-related attitudes of students from grade 9 to grade 12 was not statistically significant. This finding raises questions that justify further examination. The similarity in the level of career attitude between these grade level groups could be explained in several ways.

Crites (1995) indicates that the items on both scales of the CMI were selected to differentiate among grade levels. The results of this study which found no statistically significant difference between students in grades 9 and grades 12 on the Attitude Scale

were explained as "anomalies" (J. O. Crites, personal communication, February 24, 2000).

These findings, if taken at face value, suggest that students at these schools tend to increase their knowledge (competence) about career and career choices as a result of development occurring prior to and including grade 12. Despite the assumed developmental progression, student career attitudes do not appear to increase significantly during this time. One potential explanation is that the study participants were not typical in relation to the score expectations identified in the norm tables. Since its revision in 1995, the publishers of the Career Maturity Inventory have not established national norm tables based on research from the new instrument. The authors have printed computer-generated norm tables for grades 6-12 for both the Attitude Scale and Competence Test. Table 5 provides evidence that student participants in this study scored significantly higher than the average mean identified in the CMI computer-generated norm tables.

The student variance from the expected norm table scores could be explained by characteristics of the participating sample group. For example, Jyung (1989) found that scholastic achievement is substantially correlated to cognitive and affective career maturity. Students from the school district from which participants were selected also scored higher than average on standardized academic measures. For example, the national composite norm for the American College Test is 21, whereas students in the participating local district average 23 (Millard Public Schools, 1999). The higher academic performance of the student participants may explain some of the variation between sample and norm group scores on the CMI.

Other plausible explanations for the limited developmental change in career attitudes can be focused on the assessment tool used to measure the construct. The process of item selection for the 1995 version of the CMI involved identifying items that ideally generated 50/50 splits between the answers of "agree" or "disagree." For this research, two individual items on the instrument, however, did not seem to maintain the approximate 50/50 split expected. Specifically, questions 23 and 25 of the Attitude Scale, respectively, yielded incorrect responses from 89.6% and 80.6% of participants (N=221). Considering that the items were selected according to the 50/50 split criteria, these numbers of incorrect (not mature) responses seemed unusual. In response to these findings, Crites suggested that scale analysis was more critical than item analysis (J.O. Crites, personal communication, February 24, 2000). Crites indicated that these findings were likely anomalies and offered that removal of these items prior to running statistical analysis would compromise the integrity of the instrument.

In light of the these findings, it is recommended that item analyses be carried out on data collected from other studies which have used the 1995 version of the CMI. Recent, yet unpublished, dissertation-related research carried out in South Dakota seem to reveal similar concerns over the high number of "non-mature" responses for the Attitude Scale items 23 and 25 (W.Wolff, personal communication, February 21, 2001). The potential importance of this finding is illuminated by the fact that items 23 and 25 represent 8% of the 25-item Attitude Scale.

Despite suggestions that running an analysis of data generated from the CMI-1995 without Attitude Scale items 23 and 25 would compromise the integrity of the instrument, this procedure was performed. It was determined that the analysis was

important to an overall understanding of the Attitude Scale values for students in grades 9 and 12 which were not significantly different. As indicated in Table 4, the main effect for grade level on the Attitude scale was $F(1, 215) = 2.52$, $p = .114$ when all items were present. When items 23 and 25 were removed the effect of grade level on the Attitude Scale was $F(1,215) = 3.83$, $p=.052$. Although the scale still did not statistically differentiate between the career attitude of students in grades 9 and 12, the probability value was approaching the significance level of .05. In this study the removal or inclusion of Attitude Scale items 23 and 25 did not ultimately influence the significance of Attitude Scale values. This comparison does, however, demonstrate the potential influence that these items could have on the findings of future research that attempt to measure career mature attitudes.

Recommendations

School counselors must recognize the substantial differences in career needs of students in grades 9 and 12. The trend toward implementing comprehensive and competency-based guidance programs must continue to respect the need to differentiate programs to meet the unique needs of students at each level of development. This recommendation seems in concert with the implementation of formal written guidance curricula. As student competencies are identified for such curricula, care should be given to present students with developmentally challenging activities.

Counselors should endorse all opportunities to collect data that represents various aspects of student development. As scrutiny on public education increases, guidance personnel are likely to be asked more frequently to demonstrate their value in the school. The issue was perhaps most clearly expressed by Johnson and Johnson's (1982) question

"How are students different because of counselors?" The adoption of measurable student outcomes or competencies as part of a guidance curriculum will assist counselors in demonstrating their value to the overall education program.

These findings also suggest that researchers who use the CMI 1995 in the future perform item analyses on individual scale items. Such analysis may help to assure that potential problematic items are not adversely effecting scale or research outcomes. Continued item analysis will contribute to a better understanding of the results of this research. Specifically, further research may clarify whether or not the high percentages of incorrect (non-mature) responses on these items are indeed "anomalies." If the high percentage of incorrect responses on items 23 and 25 of the CMI - Attitude Scale are consistently replicated, it may suggest that the once reliable and valid items need to be reassessed in terms of their application to today's population.

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Table 1

Demographic Information of the Sample

Grade Level	Male	Female	Participants
Grade 9	49	61	n = 110
Grade 12	55	54	n = 111*

*Two students did not identify their gender

Table 2

Means for CMI Attitude Scale, Competence Test, and Total Score by Grade

Grade	n		Attitude	Competence	Total CMI
Grade 9	110	M	17.71	17.35	35.06
		sd	2.72	2.82	4.27
Grade 12	111	M	18.26	18.79	37.05
		sd	2.47	2.59	3.94

Attitude = Attitude Scale of the Career Maturity Inventory (25 items)
Competence = Competence Test of the Career Maturity Inventory (25 items)
Total CMI = Total score of CMI (Sum of Attitude and Competence Tests (50 items)

Table 3

ANOVA for CMI Total Score, Attitude Scale, and Competence Test by Grade Level and Gender

Source	df	MS	F	p
Grade Level				
Total Score	1	223.67	13.18	.000***
Attitude	1	17.23	2.52	.114
Competence	1	116.74	15.84	.000***
Gender				
Total Score	1	33.46	1.97	.162
Attitude	1	4.06	.60	.441
Competence	1	14.20	1.93	.167
Grade Level x Gender				
Total Score	1	8.33	.491	.484
Attitude	1	.034	.005	.944
Competence	1	7.301	.990	.321
Error	215	16.97		

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Means for CMI Attitude Scale, Competence Test, and Total Score by Gender

Gender	n		Attitude	Competence	Total CMI
Male	104	M	17.86	17.85	35.70
		sd	2.61	2.82	4.25
Female	115	M	18.10	18.27	36.37
		sd	2.62	2.80	4.21

Table 5

Z Test comparisons between Sample Means and Norm Means from the Career Maturity Inventory

	Sample Group		Norm Group		Z-Score
Grade 9	n	M	M	sd	
Attitudes	110	17.71	13.01	5.47	9.008***
Competence	110	17.35	13.01	5.47	8.318***
Grade 12					
Attitudes	111	18.26	16.01	5.47	4.332***
Competence	111	18.79	16.01	5.47	5.353***

* $p < .05$. ** $p < .01$. *** $p < .001$.